

# Solving Equations with Variables on Both Sides

## Lesson objectives

L.O. : Solve equations with variables on both sides.  
Solve equations using the Distributive Property.

Carry out procedures to solve linear equations for one  
variable algebraically.

# Solving Equations with Variables on Both Sides

## Teachers' notes

**Subject:** Math

**Topic:** Solving Linear Equations

**Grade(s):** 8th

**Prior knowledge:** Combining like terms, Distributive Property,  
Solving two step equations

1.1

Lesson objectives

Teachers' notes

Lesson notes

# Solving Equations with Variables on Both Sides

## Lesson notes

This lesson includes a real world video of solving equations with variables on both sides. The number cube activity can be completed in small groups, with partners or independently. Teacher should circulate to check understanding or have students post the correct solution on the white board.

1.1

Lesson objectives

Teachers' notes

Lesson notes

n - Up

Warm - Up

Warm - Up

Solve each equation. Click the box to reveal the answer.

1.  $x + 8 = -3$

2.  $2p - 5 = -11$

3.  $36 = 6 - 5n$

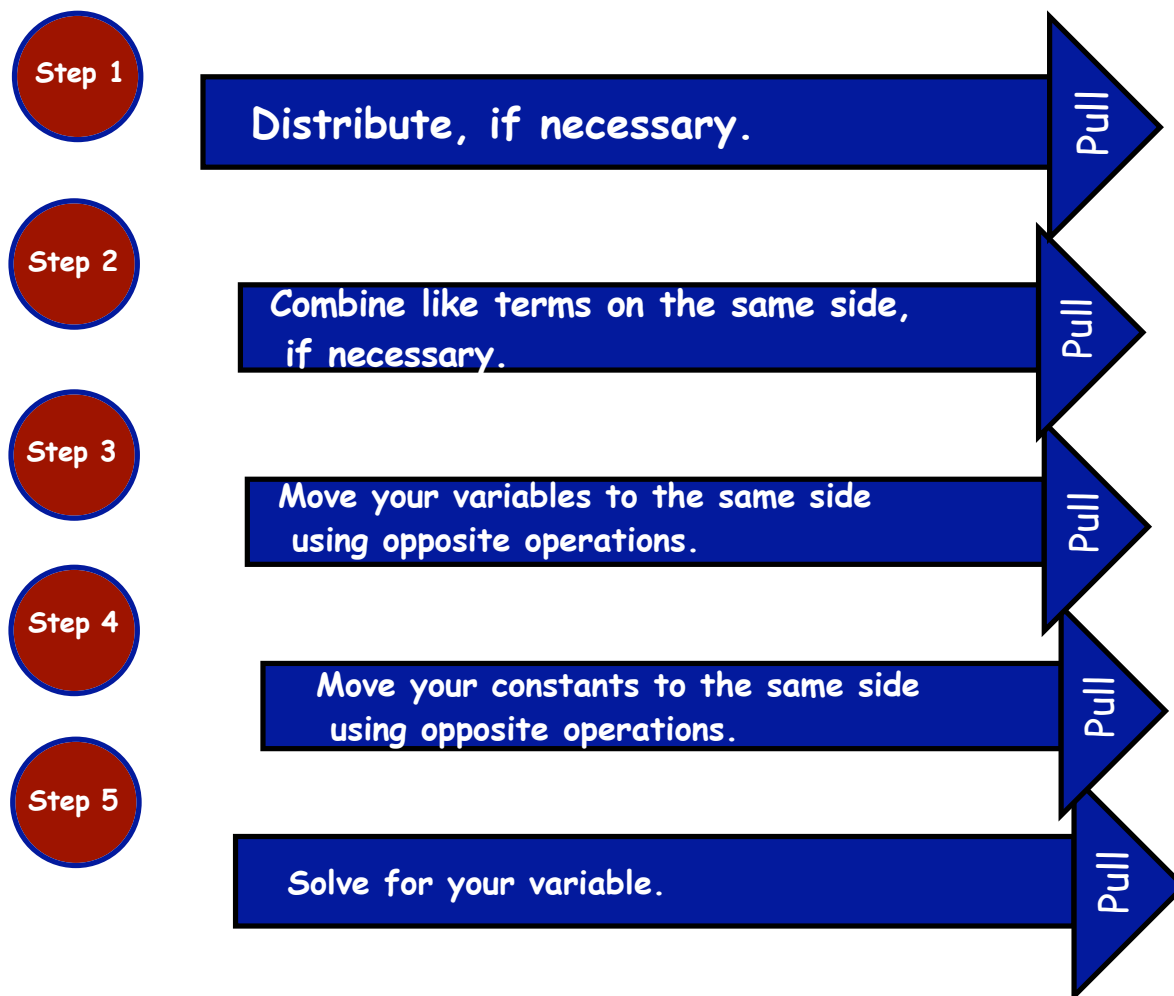
Translate and solve.

4. Four times a number plus two is the same as a negative 14.



## ● Solving Equations with Variables on Both Sides

### MINI LESSON.



[Go to Example 1](#)

[Go to Example 2](#)

[Go to Example 3](#)

[Practice](#)

[Video: Real World Problem](#)

[HOMEWORK](#)

# ● Solving Equations with Variables on Both Sides

Example #1:  $3(2x + 1) + 2x = 5x + 12$

Watch me on this first one?

$$3(2x + 1) + 2x = 5x + 12$$

Erase the box to reveal the steps.

$$6x + 3 + 2x = 5x + 12$$

Distribute

$$8x + 3 = 5x + 12$$

Combine like terms

$$8x - 5x + 3 = 5x - 5x + 12$$

Move variables together.

$$3x + 3 = 12$$

Simplify

$$3x + 3 - 3 = 12 - 3$$

Move constants together

$$3x = 9$$

Simplify

$$x = 3$$

Solve

Back to steps.

Press for example 2

Teacher Notes

## ● Solving Equations with Variables on Both Sides

Example #2:  $19x+8-8x = 4(5x+2)+36$

$$19x+8-8x = 4(5x+2) + 36$$

Let's Do  
this Together



Answer hidden here!

Bring the magnifying glass over.



Back to  
steps.

Press for  
example 3

## ● Solving Equations with Variables on Both Sides

Example #3:  $4(2p-8)-6p = 20+4(p+6)$

Work this problem in the blue box.

Move the problem to the gray box to reveal the solution.

$4(2p-8)-6p = 20+4(p+6)$	
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Try this one  
by yourself.



Did You  
Get It  
Right?

yes

☐

no

☐

Back to  
steps.

More Practice





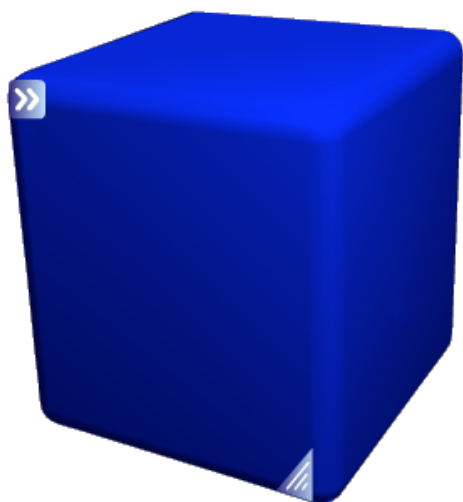
## Practice with a Partner

Roll the number cube to create a new equation to solve.

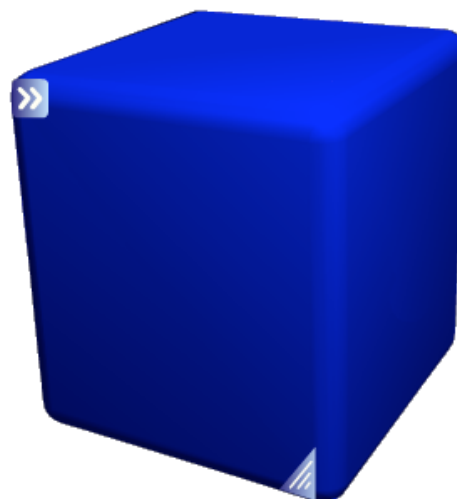
Back to  
steps.

Video

Homework



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## ● Solving Equations with Variables on Both Sides

### Real World Application:

**Watch the video to see a real world example of solving equations with variables on both sides.**



[click here to watch video](#)

Teacher Notes

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steps.

Homework

## ● Solving Equations with Variables on Both Sides

**Practice.** Solve each problem and show the work that justifies each answer.

$$1. 4(3x - 10) = 10(x - 3)$$

$$2. 7x + 5 - 2x = 3x - 17$$

$$3. \frac{1}{2}(6x + 8) + 3x = 5x + 25$$

$$4. 15x = 10x - 30$$

Homework



Teacher  
Notes

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steps.